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F-5

Universality in Coupled Maps, Sang-Yoon Kim(kangwon Nat'l Univ.) and H.

Kook(CIP/Seoul Nat'l Univ.). We study critical behaviors for period doublings in two-dimensional maps, in which two identical, one dimensional (1D) maps are symmetrically coupled. Unlike the 1D case, there exist infinite critical points (CP). The critical behaviors at almost all CP except only one special point, at which the coupling parameter c is zero, are same. These behaviors can be explained by renormalization theory. There are two fixed maps of the renormalization transformation N : one is a coupled fixed map(CFM) and the other an uncoupled fixed map (UCFM). The linearized transformation DN of N at the CFM has two essential, noncoordinate eigenvalues(ENCE), δ_1 and δ_2 , while DN at the UCFM has another ENCE in addition to δ_1 and δ_2 . Furthermore, it appears that the CFM lies on the boundary of the basin of attraction to the UCFM, since the limit point of the sequence of CP with nonzero c is just the special point, $c=0$.

F-6

전기장이 걸린 임차권 걸맞지 않는 계에서의 파동함수에 대한 multi-

fractal analysis, 류 창수, 오 기영, 이 민호 (서울대). Multi-fractal analysis 는 전자 상태의 성질을 규명하는데 유용하게 사용될 수 있다.[1] 전기장 하의 걸맞지 않는 계에서는 전기장에 의한 국소화, 비국소화를 동시에 볼 수 있는데, 전기장 또는 격자 크기의 변화에 따라, 전자 상태는 대수적으로 감소하는 상태를 거쳐 펼쳐진 상태로 전이하게 된다. 우리는 multi-fractal analysis 를 통해 전기장이 걸린 계에서의 파동함수가 자기 유사적 (self-similar) 임을 보이고, 이에 대해 물리적 논의를 한다.

- [1] L.Pietronero, A.P.Siebesma, E.Tosatti, and M.Zannetti, Phys. Rev. B **36**, 5635 (1987).

F-7

Phase Transition in Superconducting Arrays with External Currents M.Y. CHOI and SEUNGHWAN KIM*(SNU).

A two-dimensional superconducting array with applied external currents is studied in an analytical way. We obtain a Fokker-Planck equation from the Langevin equation ruling the time evolution of the system, and introduce a pseudo-Hamiltonian to describe the stationary solution of the Fokker-Planck equation. The pseudo-Hamiltonian is transformed into a Coulomb gas Hamiltonian, which, via the renormalization group technique, leads to the Kosterlitz-Thouless transition.